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be, as these are too monœcious plants, then Dr. Engelmann's theory of the sexual character may be correct. In the absence of such proof, if we are true philosophers, we are obliged to accept the nearest-by theory that explains the phenomena that the life, character and life-work of our plant presents; and pronounce it to be originally, as it comes from the seed, a monœcious grass, bearing unisexual flowers upon stalks arising from different parts increasing itself mainly by stolons proceeding from sexually different parts of the plant, each reproducing its own form.

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### The Rhizomes of *Penthorum sedoides* as Leafy Shoots.

In August, 1891, a *Penthorum sedoides*, L., was taken from the wet sand of a ditch and placed in a glass jar of water in which aquatic plants and animals were kept for study. About three months afterwards it was taken out of the jar to be thrown away, since the leaves had fallen off and the stem was mostly dead, and it was thought to be of no further use. Finding the subterranean stems, which were three or four in number and from two to three inches long, thickly covered with leaves, the plant was replaced in the jar for further development; the shoots had not attracted attention before, as they were in the midst of stems of *Anacharis*, which they resembled closely enough to be overlooked. At the beginning of the past summer most of these leaves had dropped off, but one stem had a living bud and some fresh leaves after more than a year's time had passed. The rhizomes have behaved like an aquatic, floating in the water in which they have been immersed, and receiving plenty of light but no food except what has been furnished by the stem and the water. The leaves are of a deep green color, and are closely imbricated, they are sessile, narrowly oblong-ob lanceolate, acute, and finely serrate. They are from three to five eighths of an inch long, thickish, or inclined to be fleshy. A minute bud is found in the axile of each; they are very much crowded, and are apparently eight-ranked. They call to mind species of *Sedum*, especially *S. acre*, by the imbricated leaves, their small size and general ap-

pearance, though not so fleshy. Under the conditions to which it has been subjected, the plant assumes the look of one belonging to another genus of the same family, but of a different habit, since the stone-crops are frequenters of rocks and dry places. This may show a common origin in which the ancestor of *Penthorum* resembled *Sedum* more closely than at present.

The behavior of these subterranean stems in water may also throw some light on the true place of *Penthorum* in the natural system, since it has been a matter of dispute. *Penthorum* and *Diamorpha* forming the group Diamorpheæ, and usually included with Crassulaceæ, are placed by some with the Saxifragaceæ. La Maout and Decaisne mention them in this connection, plainly regarding them as more closely allied to the latter than to Crassulaceæ, "whose relationship they evidently reject by their several-celled ovary." Schönland, who prepared the article "Crassulaceæ" for Engler and Prantl's *Pflanzenfamilien*, makes a group of *Penthorum*, *Diamorpha* and *Triactina*, and places them in his arrangement nearest to Saxifragaceæ. They are thought to be more nearly related to *Sedum* than to other genera of the order, or pointing to *Sedum* for their parentage. The small, crowded and somewhat thickened leaves borne by these spreading subterranean shoots, or stolons, of *Penthorum*, (since they also start from the stem above ground and form true stolons), make this relationship still more apparent, and help to remove one objection to placing it with the Crassulaceæ. Schönland writes as follows with regard to this relationship: "The Crassulaceæ constitute a very natural group of forms. The only genus that has been separated from them by recent authors is *Penthorum*, which Baillon has placed with the Saxifragaceæ. Its possession of membranaceous and not fleshy leaves cannot be alleged as the sole ground for this, since many species of *Crassula*, *Vialanchoe*, etc., also have quite thin, but slightly thickened leaves. Hence it may be recommended to leave *Penthorum* here" (with the Crassulaceæ).\*

E. J. HILL.

ENGLEWOOD, CHICAGO, ILL., Sept. 6, 1892.

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\*Die Natürlichen Pflanzenfamilien, III Teil, 2 Abt. a., p. 28.